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Childhood Abuse, Religiosity, and Opioid Use: Findings from the National Epidemiologic
Survey on Alcohol and Related Conditions Data

A thesis
presented to
the faculty of the Department of Sociology and Anthropology
East Tennessee State University

In partial fulfillment
of the requirements for the degree of
Master of Arts in Sociology

by
James Emerson Lewis

December 2019

Dr. Joseph Baker, Chair
Dr. Martha Copp
Dr. Leslie McCallister

Key Words: opioids, opioid abuse, childhood maltreatment, sexual abuse, emotional abuse,
physical abuse, religiosity, protective factors

ABSTRACT

Childhood Abuse, Religiosity, and Opioid Use: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions Data

by

James Emerson Lewis

Religiosity is adopting a belief system surrounding concepts of purpose, meaning, and value through an institution that has already defined these concepts prior to the individual member attending and that member's degree of participation. Religiosity does have protective factors against negative health outcomes. This protective influence was evaluated in this study. Data from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions were examined to learn about the relationship between protective effects of religious participation on substance abuse, and whether this association weakened for individuals who have experienced higher levels of childhood abuse. A binary logistic regression was completed to examine this relationship. Religiosity does decrease the likelihood of experiencing an opioid use disorder for lower levels of childhood maltreatment, but only slightly. In extreme cases of sexual, emotional, and physical abuse, religiosity does not decrease the likelihood of experiencing an opioid use disorder.

DEDICATION

I dedicate this thesis to my wife, Sarai Lewis. Without you, I wonder where I would be. Thank you for your love and support. I also dedicate this thesis to my children: Elijah Lewis, Emmie Lewis, and Oliver Lewis. I love you and may you never stop being curious.

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I thank Dr. Michelle Hurley for inspiring me to grow. Your mentorship has been imperative to my success. I thank Dr. Chris Dula for accepting into the Applied Psychology Lab and helping me with my research endeavors. I thank Dr. Leslie McCallister for teaching me to be thorough in my work. I thank Dr. Martha Copp for teaching me how to think like a sociologist. And lastly, I thank Dr. Joseph Baker for making me read Foucault so I could learn that power relations are rooted deep in the social nexus, for teaching me that “different” is not “criminal,” and for your guidance on this thesis.

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CHAPTER 1

INTRODUCTION

Opioid abuse and addiction has become an epidemic and public health crisis in the United States, (Compton and Volkow 2006; Miller and Carroll 2011; Puffer, Skalski, and Meade 2012; Keyes et al. 2014; Sigmon 2014; Compton, Boyle, and Wargo 2015), causing vast amounts of damage to those afflicted, as well as to their families and communities (de Oliveira 2017). In 2013, the Substance Abuse and Mental Health Services Administration (SAMHSA 2014) estimated for those aged 12 and above in the U.S., there were roughly 52 million illicit drug users ($\approx 9\%$ of the population). Further, addiction has been estimated to cost over \$600 billion annually, in terms of negative health outcomes, lost work output, and related crime (National Institute on Drug Abuse 2018b). Drug use has become saturated with stigma, paralleled by mostly punitively oriented drug laws (Van Olphen et al. 2009). Despite efforts made to combat such devastating results of addiction, the opioid epidemic continues (Compton and Volkow 2006; Compton et al. 2015; Rudd et al. 2016), becoming increasingly evident to the American public (Blendon and Benson 2018). Only 16% of the United States' population believe progress is being made toward reducing prescription-drug abuse (Pew Research Center 2013), and opioid overdoses continue to rise.

In the past, drug addiction has been explained under the concept of the “disease” model. According to the National Institute on Drug Abuse (2012: 1), “Addiction is a chronic, often relapsing brain disease that causes compulsive drug seeking and use, despite harmful consequences to the addicted individual and to those around him or her.”

While the disease concept is associated with a medical model of addiction and is widely accepted among 12-step groups, further research indicates other factors are involved in addiction, such as maltreatment during childhood. Many studies focus on the relationship between childhood maltreatment and outcomes with drug addiction; however, researchers have not examined this relationship and its association to religiosity. This study attempts to explore the relationship between childhood maltreatment, opioid addiction, and religiosity using data from a national survey: National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC III). Using this data, this study will explore how religiosity may mitigate the relationship between childhood maltreatment and the outcome of opioid addiction. Although previous studies have investigated the effects that religiosity has on different aspects of delinquency, such as substance abuse (Wallace et al. 2007), and there is a well-established inverse link between substance use/abuse and religiosity in the literature (Pargament et al. 1998; Miller and Bogenschutz 2007; Wallace Jr. 2007; Edlund et al. 2010; Horton et al. 2012; Puffer et al. 2012; Brown et al. 2013; Gomes et al. 2013; Palamar, Kiang, and Halkitis 2014; Giordano et al. 2015; Lund 2016; de Oliveira et al. 2017; Parenteau 2017), this study will explore how specific categories of childhood maltreatment (sexual abuse, emotional abuse, and physical abuse) relate to opioid addiction in relation to levels of religious participation. My primary research question is: Are the protective effects of religious participation on substance abuse weakened for individuals who have experienced higher levels of childhood abuse?

CHAPTER 2

LITERATURE REVIEW

Opioid Addiction

“Opioid addiction is a condition that cuts across geographies, social strata and industries” (Kuhn 2017: 33). Starting in the Appalachian region, by comparison, rural communities were more antagonistically affected by OxyContin, a prescription opioid promoted by Purdue Pharma in the ‘90s, than other areas throughout the United States (Wininger 2004). Sales data suggest that the availability of prescription opioids increased more in rural areas, and resulted with rural populations being the highest prescribers in the United States (Keyes et al. 2014: 54). Such high rates of opioid use in rural areas may be due to ecological reasons as well (Paulozzi and Xi 2008), such as high acceptance of using within the culture (Leukefeld et al. 2007). Once established, pharmaceutical companies used different marketing strategies and promotional techniques that proved effective for prescription sales (Van Zee 2009), increasing the availability of opioids among prescribers and patients elsewhere.

Dart et al. (2015) found that between the years of 2002 through 2010, opioid prescriptions increased drastically. It is estimated that 25 million people used pain relievers in a nonmedical way between the years of 2002 and 2011 (Substance Abuse and Mental Health Services Administration 2011), and estimated that 10 million people used a medical opioid between 2012 and 2013, alone (Saha 2016). This substantial rise in the use of opioids was not by chance, but rather by design (see Van Zee 2009).

During this drastic increase in opioid use, 16,651 US deaths occurred in 2010 (National Center for Health Statistics 2014). However, the rise in overdose deaths did not stop. During

2014, drug overdose deaths reached as high as 47,055 in the US, with 28,647 (60.9%) having involved an opioid, an increase of 200% since 2000 (Rudd et al. 2016a). In 2015, this number increased to 52,404, with 33,091 (63.1%) involving opioids (Rudd et al. 2016). Drug overdose deaths became the leading cause of unintentional death in 2015 (Rudd et al. 2016; Murphy et al. 2017). According to the Diagnostic and Statistical Manual for Mental Disorders, 4th Edition, approximately 1.9 million people meet criteria for opioid addiction (SAMHSA 2014). Apparently, the epidemic continues with little progress of current strategies combating the issue among the public in the U.S. According to Cicero et al. (2014) approximately 115 people a day die due to opioid overdose.

Paulozzi and Xi (2008) focused on drug-related overdose, specifically on how levels varied by urbanization and the type of drugs associated between 1999 through 2004 in the U.S. Not only did Paulozzi and Xi (2008) find that drug overdoses increased drastically during this time, but nonmetropolitan counties (i.e., rural areas) experienced a 159% increase, compared to only a 51% increase in metropolitan counties (i.e., nonrural areas). This increase in rural areas across the United States illustrated a new pattern in drug use, primarily driven by the rise in opioid use, which involved in more overdoses than heroin or cocaine (Paulozzi and Xi 2008).

Childhood Maltreatment

Childhood maltreatment is another major issue that takes place around the globe (Afifi et al. 2012), and is commonly found in the United States as well (Afifi et al. 2011). Research on the link between drug abuse and childhood maltreatment suggests that approximately 66% of addicted individuals have experienced either physical, sexual, or emotional abuse (Swan 1998). More recent studies in the literature indicate a strong, positive correlation between childhood maltreatment and addiction outcomes in later adulthood (Dube et al. 2003; Dong et al. 2003;

Anda et al. 2006), which is why childhood maltreatment is such an important variable when analyzing addiction.

Childhood maltreatment can be in the form of physical, emotional, and/or sexual abuse (Cicchetti and Valentino 2006). Research suggests that encountering trauma at an early age may result in diverse, negative, adult consequences later in adulthood (Anda et al. 2006; Briere and Jordan 2009; Gilbert et al. 2009; McDonnell and Valentino 2016). Such trauma can be a predisposition in adulthood as a pathway to substance use (Miller 1999; Dube et al. 2003; Widom, Marmorstein, and White 2006; Lo and Cheng 2007). With childhood maltreatment being a risk factor for later substance abuse issues, it may thwart supplementary coping mechanisms. Bernstein, Stein, and Handelsman (1998) illustrated that then-contemporary studies of addicts' and alcoholics' histories revealed a relatively high prevalence of self-reported experiences of child abuse and neglect, in populations seeking treatment. Persistent childhood maltreatment denotes being raised in a volatile environment that victimizes the child and consistently frustrates a universal need to feel worth as an individual (e.g., Maslow 1943). The need to belong is a pervasive and fundamental motivating factor (Baumeister and Leary 1995). The philosophy that a duality exists between physical and mental attributes, commonly found in modern medicine in the United States, has turned physicians and scholars away from understanding risk associated with the psycho-socio dynamics in relation to overall health (Dube et al. 2003). However, accumulated evidence suggests that complications that arise in childhood are linked to negative health outcomes throughout a person's life, especially later in adulthood (Dube et al. 2003; Dong et al. 2003; Anda et al. 2006).

Religiosity

Spirituality is a concept that can be tailored to a person's own self-awareness, and this includes asking questions about life, searching for meaning, and the promotion of healthy living among the individual and others (de Oliveira et al. 2017), and even elevating these ideas through purpose, meaning, and value, whereas religiosity is adopting a belief system surrounding these same concepts of purpose, meaning, and value, but only through an institution that has already defined these concepts prior to the individual member, and that member's degree of participation (Brown et al. 2006). Although this study seeks to examine the relationship between substance use and religiosity, belief systems, whether spiritual and/or religious, and substance use have crossed paths throughout history (Miller and Bogenschutz 2007). For example, Christianity and Judaism permit the use of drugs (e.g., alcohol) in ritual and practice, and other religions, such as Mormonism and Islam, have banned the use of alcohol (Miller and Bogenschutz 2007). The main goal of this study is to explore the inverse relationship of these two variables, and to see if this inverse relationship is inhibited by childhood abuse.

When looking at both qualitative and quantitative literature on the relationship between religiosity and drug use, it is apparent that an inverse, well-established relationship between the two exists (Pargament et al. 1998; Miller and Bogenschutz 2007; Wallace Jr 2007; Edlund et al. 2010; Horton et al. 2012; Puffer et al. 2012; Brown et al. 2013; Gomes et al. 2013; Palamar et al. 2014; Giordano et al. 2015; Lund 2016; de Oliveira et al. 2017; Parenteau 2017). One of the first studies conducted on the subject between religion and substance use happened in Ireland, with participants consisting of college students and the findings being an inverse relationship between church attendance and alcohol use (Parfrey 1976). In the study by de Oliveira et al. (2017), researchers asked specifically: What role does religiosity play in the field of drug addiction?

After identifying 242 studies, only 8 were selected, after passing criteria for evaluation, to answer this question. What de Oliveira et al. (2017) found is that religiosity and spirituality can lower the chance of a person experiencing an substance use disorder and help discontinue what an addicted individual may experience through symptoms of drug withdrawal due to the amount of influence religiosity holds on mental health. By adopting practices and beliefs that promote “meaning to life through feeling of hope and faith” (de Oliveira et al. 2017: 284), religiosity becomes a positive influence within the human psyche, making it a relevant alternative for faith-based treatment programs outside of modern, psychiatric medicine due to its protective factor for substance abuse prevention and treatment.

Looking deeper into the association of religiosity and drug use, other researchers examined what this role entailed, such as how religion is used (i.e., religious coping). Many individuals report using religion to cope with unwanted stress (Pargament, Koenig, and Perez 2000). Religious coping is defined by Pargament et al. (2000: 521) as “how the individual is making use of religion to understand and deal with stressors.” Puffer et al. (2012) evaluated whether religious coping (how religion is used as defined by Pargament et al. (2000) in terms of negative and positive), and/or the use of a 12-step program, played a role in a person’s recovery process from opioids. Puffer et al. (2012) found that religious coping leads to a higher probability that an addicted individual may be more likely to join a 12-step group and is associated with higher rates of success while in recovery (meaning no relapse or longer periods without use).

In essence, positive coping can be a protective factor in addiction from opioids, while coping in a negative way may block an individual’s path to treatment. This may also be in association to how “god(s)” is/are viewed. This can include a person’s understanding of god(s)

as either malevolent or benevolent. According to Pargament et al. (1998), positive coping is associated to viewing god in a benevolent way, such as seeking god in a way that would help an individual, rather than a malevolent way (e.g., “god is going to punish me”), causing an individual to use religion in a negative way to cope with drug addiction. This is congruent with Horton et al.’s (2012) findings that individuals with secure feelings toward god was not a predictor when studying drug use among participants, and anxious feelings toward god was the strongest predictor of current drug use. However, regardless of the way a person views his or her god(s), religious importance is what this study evaluated, and demonstrated that “religious importance is highly related to level of religious attendance” (Palamar et al. 2014: 664). Religious importance may be highly associated to religious attendance because the more an individual spends time practicing his or her faith in a place of worship, he or she is not in association with a place and/or person that is in association with using substances (Chen et al. 2004). Therefore, if a person is at church, synagogue, or mosque, that person is less likely to be exposed to drug use conducted by individuals outside of normal drug use practices (e.g., prescribed medication).

However, aside from only looking at religious practice as a displacement of location, Chen et al. (2004) illustrate how religion serves a broader impact as a protective factor from drug use: 1) Religious practices (i.e., time spent participating) have a negative association with initial drug use; 2) Being Protestant, or some other religion outside of a Catholic denomination, has a negative association with drug use; 3) Having a religious affiliation is negatively associated with the time lapse between first contact (i.e., being offered a drug) and initial use; and 4) Others without a religious affiliation have an increased report of drug use in this study, especially cannabis.

With such overlap among addiction, religiosity, and childhood maltreatment, this study seeks to understand how these variables intersect. Palamar et al. (2014) examined different associations to religiosity and the outcomes of drug use. In other words, this article asked what affiliations (including agnostic and atheist) have higher levels of drug use. Palamar et al. (2014) explain how religious attendance is a great predictor for outcome of level of drug use. Atheists and Agnostics were at higher risk for drug use and suggests that reporting “Atheist” or “Agnostic” would be an indicator of an individual having a low affiliation to religious practice, as measured by the researchers. In this report, the higher the level of religious importance, the higher level of religious attendance is found ($r\text{-squared} = .67, p < .001$). However, when this study evaluated a second step in the stepwise logistic regression model, the biggest predictor was exposure to drug users (odds ratio = 1.21, $p < .0001$), and this diminished the effects of importance and attendance of religion. This conclusion does not take away from time-spent at a church being significantly associated with high religious importance, but rather shows how time-not-spent at a religious institution may mean higher chances of exposure to drug users, which may indicate lower protective value from drug use overall.

Religion as a protective factor is not a new concept. It is important to add that, depending on the religious structure, an individual’s view of recovery will be different from others. For example, the term recovery is ambiguous. Many institutions try to define this term, although, in the end, it is nothing more than a philosophy. The addiction field's failure to achieve a consensus definition of recovery from drug and alcohol abuse, and other problems, undermines clinical research, thus compromises clinical practice, and muddles the field's communications to service constituents, allied service professionals, the public, and policymakers (Laudet 2007; White 2007). White (2007) also points out that using the term “recovery” as being abstinence from

drugs and/or alcohol leaves out additional components related to health, ranging from physical and emotional wellbeing to spirituality and life meaning principals. Without a specific definition, Laudet, Morgen, and White (2006) illustrate that the avenue toward achieving recovery from drug addiction is simultaneously the avenue toward a life that is at a higher level of quality than the previous one before the change.

Social networks widely shape how individuals heal from drug addiction, specifically opioid use. Berkman et al. (2000: 843) primarily build on theoretical positions developed by Emile Durkheim and John Bowlby, and explain that actors operate within social networks through four distinct avenues: “social support,” “influence,” “influence on engagement and attachment,” and the ability to “access resources and material goods.” Berkman et al. (2000) illustrate how social networks operate from “upstream” behavioral patterns (individual to the structure) as well as “downstream” behavioral patterns (structure to the individual). These patterns have vast influence on individuals’ biological and psychological welfare (Berkman et al. 2000), which specifically affects recovery from addiction.

Religious structures address additional components that are sometimes overlooked (as White [2007] illustrated), such as life meaning and purpose. Religious structures can help mold these areas within an individual and have an important role when shaping “self” and social networks. Twelve-step programs (starting with Alcoholics Anonymous), for example, have been a part of America’s history since the end of the prohibition, and have grown into a worldwide way for individuals to achieve “sobriety” since 1935 (see Jones 1970). In the continual studies of recovery from drug addiction and/or alcoholism, there is debate that 12-step-programs and fellowships are among the most effective and popular methods for treatment (Rafalovich 1999). However, others suggest that research on addicted individuals is based on an outdated paradigm,

with heavy influence by twelve-step groups (Hanninen and Koski-Jannes 1999). The historical movement by twelve-step programs ultimately set the status quo. This quasi-religious group is perhaps that most popularized when associating God and addiction recovery (Sellman et al. 2007). Groups such as these have defined recovery as the abstinence from drugs and alcohol (e.g., Narcotics Anonymous (NA)) (el-Guebaly 2012: 3), and are centered in a Christian framework that speak beyond typical human experiences and are “God-driven” (Sellman et al. 2007: 804).

There are also religious institutions outside of 12-steps programs. These religious institutions/“recovery ministries” involve support from the religious ministry’s “faith communities,” whether it be in a church, mosque, synagogue, or temple (White, Kelly, and Roth 2012: 9). Recovery ministries operate outside of personal recovery from drug addiction by setting guidelines within a social network for both individuals and families (White et al. 2012). Celebrate Recovery, for example, is found in over 10,000 churches (and mega churches), and includes workshops as well as recovery-oriented pastors (White et al. 2012). These religious originations can provide services for treatment outside of typical systems found within traditional western medicine, and individuals report benefits from these services (Brown et al. 2011). As Berkman et al., (2000) outlined, these religious institutions are operating within four distinct avenues for social networks previously discussed. They provide social support, provide influence, provide influence through social interaction, and provide resources by offering treatment. In other words, religion helps structure social networks when integrating these four avenues.

The reason for the relationship between religiosity and substance use/misuse has been long debated (Chitwood, Weiss, and Luekefeld 2008), and “the mechanism(s) remain poorly

understood” (Edlund et al. 2010: 828). There are differential effects of religiosity on substance abuse, and some studies show that religion is contingent on other factors. It is not religion alone that channels a protective factor against substance use. How religion is consumed can make a difference in an individual’s life. In one study, Green’s and Elliott’s (2010) findings demonstrate that fundamentalism (strict adherence to religious teachings) and liberalism (variable adherence to religious teachings) have a strong association with healthier lifestyles and better psychological well-being, overall. However, when compared, Green and Elliott (2010) found significant results, indicating that fundamentalist belief is associated with worse health when compared to liberal belief, whereas, those with liberal beliefs are less happy than those with fundamentalist beliefs. In another study, Bartkowski and Xiaohe (2007) found that religiosity differentiated with outcomes against drug use in data collected on American high school seniors when examining religion as social capital. Using an ordered logit regression, Bartkowski and Xiaohe found that the inverse link between religion and drug use is due to service attendance rather than trust in God. This study found that social capital played a larger role, and found that having trust in people, rather than God, illustrated a negative, strong, and unchanging effect over time with drug use.

A person’s proximity to a religious institution will make a difference on the effects of religion as a protective factor for substance use/misuse. In a study published over 40 years ago, the relationship between religiosity and delinquent behavior was found to have no association (Hirschi and Stark 1969). However, when this topic was revisited at a later date, Stark (1996) found, in a nationwide, quantitative study, that church attendance is a protective factor against substance use. The difference between these two studies, which Stark (1996) points out, is taking into account ecological differences (i.e., close proximity to a church). Answering “yes” or “no”

to church attendance on a survey, instead of providing a degree of attendance (e.g., Once a year, once a month, or twice a week), limits the results. Moscati and Mezuk (2014) found similar results as Stark (1996), but also examined other factors as well. Moscati and Mezuk (2014) examined the effects of childhood religiosity in association with later exposure to illicit and licit drug use. The results showed that a 2-unit decrease in religiosity from childhood to adulthood increased (3.5 times more likely) the odds of drug use in the past year. Moscati and Mezuk illustrate how time between adolescence and adulthood leave room for many changes (e.g., more freedom, absent parent, and life course decision making) in a teenager's life. Moscati's and Mezuk's results also show that a 2-unit increase in religiosity was associated (2 times more likely) with illicit drug use in the past year and explain that this relationship may be due to the reason why religion was sought in the first place, such as personal hardships that intersect with addiction issues. Thus, increased and decreased levels of childhood religiosity and adult religiosity have a significant impact on the later outcomes of substance use/misuse later in life.

There are occasions that these differential effects of religiosity on substance use stem from larger, macro roles, rather than individual, micro cases. Research by Gruber and Hungerman (2008) illustrate that the repeal of "blue laws" (buying alcohol on Sunday) increases alcohol use; however, this relationship is found primarily for those that are of the religious type and most affected by such laws. When evaluating other variables such as social support and mental health status as mediating variables, Edlund et al. (2010) found that social support and mental health status played little role in changing the impact of religiosity on substance use as a protective factor. In one quantitative study, researchers found that religiosity has no significant effect on adolescent sexual minorities as a protective factor against substance abuse; however,

these results were inverse for adolescent heterosexuals, reducing the odds for substance use by each unit increase of religiosity (Rostosky, Danner, and Riggle 2007).

Berkman et al.'s (2000) discussion on John Bowlby's work about secure attachment starts at birth and relates to adult development. This development coincides with Horton et al.'s (2012) findings that an individual's views toward a divine entity are associated with secure feelings of attachment. Although researchers have clearly linked religion as being a protective force against drug use and preventative force, it is not as monolithic factor as prescribed. It is not the same in all circumstances and may have different effects depending on individuals' personal backgrounds. This study asks a specific question: Are the protective effects of religiosity on substance use inhibited by greater experiences with childhood abuse? In other words, do higher levels of abuse make it less likely that religion will keep people from abusing drugs, specifically opioids?

CHAPTER 3

METHODS

The 2004-2005 Wave 2 (N=34,653) of the NESARC data (Grant and Kaplan 2005) is the second survey to take place after Wave 1 (N=43,093) (Chen et al. 2010), which is a representative survey of the U.S. population (noninstitutionalized). Face-to-face interviews were conducted with adults, 18 and over, for Wave 1 and Wave 2. The current study utilized Wave 2 data from the interviews conducted to analyze the variables under investigation: childhood maltreatment, religiosity, and opioid abuse. Interviews for Wave 2 started in August of 2004 and ended by September 2005 (Grant et al. 2009). Participants from Wave 1 were interviewed in Wave 2, unless circumstances prevented them from being able to engage with the survey, making them non-eligible: death of the participant (N=1,403); deployed on active duty in the military during Wave 2 assessment (N=950); and expelled from the U.S., or mentally or physically impaired (N=781) (Grant et al. 2009). The remaining respondents (N=5,306) were eligible; however, they either refused to further participate or researchers were unable to make second contact with them due to the inability to locate or communicate with them. The cumulative response rate for Wave 2 is 70.2% (Grant et al. 2009). Lastly, before being interviewed, informed consent was attained from all the participants being interviewed for the survey.

Measures

Following a questionnaire designed to measure conflict and violence within the family (see Straus 1979; Straus et al. 1996), the Childhood Trauma Questionnaire (CTQ) was developed by Bernstein et al. 1997). The CTQ short-form (Thombs, Lewis, Bernstein, Medrano, and Hatch

2007) was used to measure childhood maltreatment. This 28-item self-report measures 5 types of maltreatment: Emotional Abuse (EA), Physical Abuse (PA), Sexual Abuse (SA), Emotional Neglect (EN), and Physical Neglect (PN). A 5-point Likert scale ranged from “Never True” to “Very Often True.” Later however, Wave 2 of the NESARC survey did not replicate the CTQ, it did address adverse experiences during childhood by including items similar to those found in the Adverse Childhood Experience study (see Dong et al. 2003; Dube et al. 2003). Although these experiences are broad within the Adverse Childhood Experience study (see Dong et al. 2003; Dube et al. 2006), Wave 2 of the NESARC survey, specifically to this study, addresses five factors of adverse experiences during childhood, using only three for data analysis. Participants were asked to answer questions that addressed occurrences (factors) of sexual abuse, emotional abuse, physical abuse, physical neglect, and exposure to domestic violence.

Dependent Variable

Opioid Use Disorder. The opioid use disorder variable for this study is indicated by a one item measure asking about a person’s history with opioids using his or her definition of use being a disorder. This item and all relevant data were pulled from the NESARC questionnaire. This 1-item self-report asked respondents if they have ever had an opioid use disorder in his or her lifetime, with answers that follow: 0 = “No opioid use disorder,” 1 = “Opioid abuse only,” and 2 = “Opioid dependence, with or without abuse.” This was used for the correlation matrix in this study; however, when this variable was used for bivariate regression analysis, it was recoded into a binary outcome: 0 = “No opioid use disorder” and 1 = “Opioid abuse or dependence.”

Independent Variables

Religiosity. The religiosity variable for this study is indicated by a one item measure asking about a participant's religiosity in reference to religious service attendance. This item and all relevant data were pulled from the NESARC questionnaire. This 1-item self-report measure asks: 1) How often do you attend religious services? Answers were measured on a 6-point Likert scale, ranging from 0 = "Never," 1 = "Once a year," 2 = "A few times a year," 3 = "1 to 3 times a month," 4 = "Once a week," to 5 = "Twice a week or more." These items are recoded for this study for statistical clarification and reading, setting 1 to 0, 2 to 1, 3 to 2, 4 to 3, and 5 to 4. A more detailed description of this variable can be found in Appendix B.

Sexual Abuse. The Sexual Abuse Scale (SAS) was developed for this study by examining four items that relate to directly to childhood sexual abuse (under the age of 18) that were asked on the NESARC questionnaire. This 4-item self-report measure includes four questions: 1) Before age 18, how often did adult/other person fondle/touch you in sexual way when you didn't want this/were too young to know what was happening?; 2) Before age 18, how often did adult/other person have you touch them in sexual way when you didn't want this/were too young to know what was happening?; 3) Before age 18, how often did adult/other person attempt sexual intercourse with you when you didn't want this/were too young to know what was happening?; 4) Before age 18, how often did adult/other person have sexual intercourse with you when you didn't want this/were too young to know what was happening? Answers were measured on a 5-point Likert scale, ranging from 0 = "Never" to 4 = "Very often." This measure yielded a Cronbach's alpha of .91.

Emotional Abuse. The Emotional Abuse Scale (EAS) was developed for this study by examining three items that relate to directly to childhood emotional abuse (under the age of 18) that were asked on the NESARC questionnaire. This 3-item self-report measure includes three

questions: 1) Before age 18, how often did parent/caregiver swear, insult or say hurtful things to you?; 2) Before age 18, how often did parent/caregiver threaten to hit you or throw somethings at you?; 3) Before age 18, how often did parent/caregiver make you fear that you would be physically hurt or injured? Answers were measured on a 5-point Likert scale, ranging from 0 = “Never” to 4 = “Very often.” This measure yielded a Cronbach’s alpha of .85.

Physical Abuse. The Physical Abuse Scale (PAS) was developed for this study by examining two items that relate to directly to childhood physical abuse (under the age of 18) that were asked on the NESARC questionnaire. This 2-item self-report measure includes two questions: 1) Before age 18, how often did a parent/caregiver push, grab, shove, slap or hit you?; 2) Before age 18, how often did parent/caregiver hit you so hard that you had marks or bruises or were injured? Answers were measured on a 5-point Likert scale, ranging from 0 = “Never” to 4 = “Very often.” This measure yielded a Cronbach’s alpha of .82; however, the preferred reliability statistic for a two item measure is the Spearman-Brown formula, which yielded a coefficient of .83.

Multivariate Controls

Personal Income. The personal income variable is measured on a 18-point scale, with each point indicating a certain amount of income: 0 = “\$0.00”; 1 = “\$1 to \$4,999”; 2 = “\$5,000 to \$7,999”; 3 = “\$8,000 to \$9,999”; 4 = “\$10,000 to \$12,999”; 5 = “\$13,000 to \$14,999”; 6 = “\$15,000 to \$19,999”; 7 = “\$20,000 to \$24,999”; 8 = “\$25,000 to \$29,999”; 9 = “\$30,000 to \$34,999”; 10 = “\$35,000 to \$39,999”; 11 = “\$40,000 to \$49,999”; 12 = “\$50,000 to \$59,999”; 13 = “\$60,000 to \$69,999”; 14 = “\$70,000 to \$79,999”; 15 = “\$80,000 to \$89,999”; 16 = “\$90,000 to \$99,999”; and 17 = “\$100,000 or more.” This variable includes any income from food stamps as well.

Education. Using the education variable, this study differentiated between different levels of education and controlled for this variable in the model. This allowed for more internal and external validity. The education variable is measured on a 14-point scale, with each point indicating a certain amount of education: 0 = “No formal schooling”; 1 = “Completed grade K, 1 or 2”; 2 = “Completed grade 3 or 4”; 3 = “Completed grade 5 or 6”; 4 = “Completed grade 7”; 5 = “Completed grade 8”; 6 = “Some high school (grades 9-11)”; 7 = “Completed high school”; 8 = “Graduate equivalency degree (GED)”; 9 = “Some college (no degree)”; 10 = “Completed associate or other technical 2-year degree”; 11 = “Completed college (bachelor's degree)”; 12 = “Some graduate or professional studies (completed bachelor's)”; and 13 = “Completed Master's degree or higher graduate degree.”

Race/Ethnicity. According to Chen et al. (2010), the race/ethnicity variable is a similar design used in an algorithmic fashion established by the Census Bureau. Although this variable records both race and ethnicity, individuals were captured in the data regardless of what race they identify with (Chen et al. 2010). For example, although one answer is “Hispanic or Latino,” the individual selecting this answer would still be classified as “Hispanic or Latino” (Chen et al. 2010). In this way, if any participant did not identify with the answer Hispanic or Latino, that participant would be placed into another category of that participant’s choosing. However, with the participants taking the NESARC survey, each participant would be asked to choose one of five answers concerning race/ethnicity: 1 = “Black, non-Hispanic;” 2 = “American Indian/Alaska Native, non-Hispanic;” 3 = “Asian/Native Hawaiian/Pacific Islander, non-Hispanic;” 4 = “White, not Hispanic;” 5 = Hispanic, any race (Chen et al. 2010).

For this study, each variable is coded in a binary, “0” or “1,” way for purpose of the logistical regression. For example, “Black” is coded as either 0 = “Not Black” or 1 = “Black.”

This same type of coding was used for “American Indian/Alaska Native, non-Hispanic,” “Asian/Native Hawaiian/Pacific Islander, non-Hispanic,” and “Hispanic, any race. “White, not Hispanic” was not added to the model for purposes of the model automatically selecting on the four previously mentioned selections, or defaulting to “White, not Hispanic” if the selection did not match one of the four coded. This, too, is for purposes for adaptation to the logistic regression model and output.

Male/Female. The sex variable is coded in a binary, “0” or “1,” way for purposes of the logistical regression. Males are coded as “1” and females are recoded as “0.” This helped control for any sex differences that may explain any variation in the model.

Importance of Religion or Spirituality (R/S) in your Daily Life. The religiosity variable for this study is indicated by a one item measure asking about religiosity. This item and all relevant data were pulled from the NESARC questionnaire. This 1-item self-report measure asks: 1) How important are religious or spiritual beliefs in your daily life? Answers were measured on a 4-point Likert scale, ranging from 0 = “Not important at all,” 1 = Not very important,” 2 = Somewhat important,” to 3 = “Very important.”

CHAPTER 4

RESULTS

The relationships of interest in Table 1 are religious attendance, Sexual Abuse Scale, Emotional Abuse Scale, and Physical Abuse Scale, with each variable being examined with having experienced an Opioid Use Disorder as the outcome. In the first row, there is a negative association (-.28) between religious attendance and having experienced an opioid use disorder. In the second row, there is a positive association (.45) between the Sexual Abuse Scale and having experienced an opioid use disorder. The third row shows that the Emotional Abuse Scale and having experienced an opioid use disorder have a positive association (.44). Lastly, the fourth row demonstrates that the Physical Abuse Scale has a positive association (.42) with having experienced an opioid use disorder. These associations mean that knowing the level of a person's religious attendance and levels of childhood sexual, emotional, or physical abuse would improve the estimate of knowing if a participant had ever experienced an Opioid Use Disorder by 28%, 45%, 44%, or 44%, depending on the variable of interest. Abuse of all types are strong risk factors for opioid abuse, while religious participation is a moderate protective factor. All findings in Table 1 are significant at a level of $p < .001$.

Table 1: Gamma and Chi Square

Variables	γ	χ^2
Religious Attendance	-.280	$\chi^2(5) = 79.299, p = .000$
Sexual Abuse Scale	.446	$\chi^2(16) = 219.402, p = .000$
Emotional Abuse Scale	.437	$\chi^2(12) = 372.563, p = .000$
Physical Abuse Scale	.419	$\chi^2(8) = 315.902, p = .000$

Logistic Regression

The binary logistic regression was completed to determine the effects of sexual abuse, emotional abuse, physical abuse, education, personal income, sex, race/ethnicity, religious attendance, importance of religion, and the interaction between sexual, emotional, and physical abuse and religious attendance on the likelihood that participants either answered “Yes” or “No” in reference to ever experiencing an opioid use disorder. Table 2 does not have any interaction variable included. Table 3 includes the interaction variable of the Sexual Abuse Scale by religious attendance, followed by Table 4 with the Emotional Abuse Scale by religious attendance, and Table 5 with the Physical Abuse Scale by religious attendance. These three interaction effects allow further analysis to be completed when examining these relationships in Figures 1, 2, and 3. The interactions allow us to determine whether the protective effects of religious attendance are different depending on a person’s history of childhood abuse.

Table 2: Binary Logistics Regression Model for Various Childhood Maltreatment Scales and
Religiosity

Ever had Opioid Use Disorder	Independent Variable	B	SE	Exp(B)
Yes, the Respondent has Experienced an Opioid Use Disorder	Sexual Abuse Scale	.132**	.026	1.141
	Emotional Abuse Scale	.226**	.056	1.305
	Physical Abuse Scale	.136*	.055	1.146
	Education ¹	-.062	.048	.940
	Personal Income	-.226**	.048	.797
	Male	.391**	.045	1.478
	Black	-.249**	.053	.780
	American Indian/Alaska Native, non-Hispanic	.076**	.026	1.079
	Asian/Native Hawaiian/ Pacific Islander, non-Hispanic	-.118*	.056	.889
	Hispanic	-.209**	.048	.812
	Religious Attendance	-.256**	.049	.774
	Importance of Religion ² Or Spirituality in Daily Life	.013	.045	1.013

* $p \leq .05$ level; ** $p \leq .01$

¹ The “Education” variable was added into this model for control; however, it was not significant.

² The “Importance of Religion or Spirituality in Daily Life” variable was added into this model for control; however, it was not significant. This variable was not taken out for Table 5, 6, and 7, as taking it out had no effect on the interaction variable in the model and no significant change overall.

Tables 3, 4, and 5 test the interaction effects between each of the abuse scales: Sexual Abuse Scale in Table 3, Emotional Abuse Scale in Table 4, and Physical Abuse Scale in Table 5. All the interactions are significant and positive, meaning the effect of religious attendance significantly vary for people with difference levels of childhood abuse.

Table 3: Binary Logistics Regression Model for Various Childhood Maltreatment Scales and Religiosity: Interaction Effect (SA)

Ever had Opioid Use Disorder	Independent Variable	B	SE	Exp(B)
Yes, the Respondent has Experienced an Opioid Use Disorder	Sexual Abuse Scale	.053**	.020	1.054
	Emotional Abuse Scale	.272**	.056	1.312
	Physical Abuse Scale	.132*	.054	1.144
	Education	-.062	.048	.940
	Personal Income	-.228**	.048	.796
	Male	.388**	.045	1.475
	Black	-.249**	.053	.779
	American Indian/Alaska Native, non-Hispanic	.077**	.026	1.080
	Asian/Native Hawaiian/Pacific Islander, non-Hispanic	-.119*	.056	.888
	Hispanic	-.210**	.048	.811
	Religious Attendance	-.151*	.027	.860
	Importance of Religion Or Spirituality in Daily Life	.018	.045	1.018
	Sexual Abuse by Religious Attendance	.015*	.007	1.015

* $p \leq .05$ level; ** $p \leq .01$

Table 4: Binary Logistics Regression Model for Various Childhood Maltreatment Scales and
Religiosity: Interaction Effect (EA)

Ever had Opioid Use Disorder	Independent Variable	B	SE	Exp(B)
Yes, the Respondent has Experienced an Opioid Use Disorder	Sexual Abuse Scale	.130**	.026	1.139
	Emotional Abuse Scale	.084**	.024	1.088
	Physical Abuse Scale	.134*	.054	1.144
	Education	-.061	.048	.941
	Personal Income	-.228**	.048	.796
	Male	.390**	.045	1.477
	Black	-.251**	.053	.778
	American Indian/Alaska Native, non-Hispanic	.076**	.026	1.079
	Asian/Native Hawaiian/ Pacific Islander, non-Hispanic	-.120*	.056	.887
	Hispanic	-.211**	.048	.810
	Religious Attendance	-.187**	.032	.829
	Importance of Religion Or Spirituality in Daily Life	.016	.045	1.016
	Emotional Abuse by Religious Attendance	.018**	.006	1.018

* $p \leq .05$ level; ** $p \leq .01$

Table 5: Binary Logistics Regression Model for Various Childhood Maltreatment Scales and
Religiosity: Interaction Effect (PA)

Ever had Opioid Use Disorder	Independent Variable	B	SE	Exp(B)
Yes, the Respondent has Experienced an Opioid Use Disorder	Sexual Abuse Scale	.128**	.026	1.136
	Emotional Abuse Scale	.272**	.056	1.312
	Physical Abuse Scale	.039	.038	1.040
	Education	-.060	.048	.942
	Personal Income	-.228**	.048	.796
	Male	.390**	.045	1.476
	Black	-.252**	.053	.777
	American Indian/Alaska Native, non-Hispanic	.075**	.026	1.078
	Asian/Native Hawaiian/ Pacific Islander, non-Hispanic	-.120*	.056	.887
	Hispanic	-.211**	.048	.810
	Religious Attendance	-.192**	.031	.825
	Importance of Religion Or Spirituality in Daily Life	.018	.045	1.018
	Physical Abuse by Religious Attendance	.032**	.009	1.032

* $p \leq .05$ level; ** $p \leq .01$

The effects of religious service attendance graphed in Figures 1, 2, and 3.

The Nagelkerke R² figure in Table 2, 3, 4, and 5 illustrates that these models explain a small amount (7.8% [Table 2])/7.9% [Table 3]/8.0% [Table 4 and Table 5]) of variance in experiencing an opioid use disorder. Each model does correctly classify 98.2 percent of cases in all four Tables. This is because there is low variance in the outcome, since a low percentage of people have had opioid use disorders. Despite the low explanatory power of this model, there are findings represented in these models that are significant. The outcomes in these models were found to be significant under two p-values: $p \leq .05$ and $p \leq .01$.

The following variables have the strongest effect on the variable experiencing an Opioid Use Disorder in each logistical regression model from greatest to least using the Wald scores in Table 2: sex, religious attendance, Sexual Abuse Scale, Emotional Abuse Scale, Black, personal income, Hispanic, American Indian/Alaska Native, non-Hispanic, Physical Abuse Scale, and Asian/Native Hawaiian/Pacific Islander, non-Hispanic. The remaining two variables, religious importance and level of education, have the least effect on the variable outcome of experiencing an opioid use disorder and are not significant in all four logistic models.

The following descriptions of variables are for Table 2. The odds of male participants experiencing an opioid use disorder is 47% higher when compared to female participants and is significant at the .01 level. For each unit increase in religious service attendance, the odds of ever experiencing an opioid use disorder decrease by 22.6% with a significance value at the .01 level. For each unit increase on the measure of Sexual Abuse before the age of 18 (Sexual Abuse Scale), the odds of experiencing an opioid use disorder increase by 14.1% with a significance at the .01 level. For each unit increase on the measure for experiencing Emotional Abuse before the age of 18 (Emotional Abuse Scale), the odds of experiencing an opioid use disorder increase by 31% with a significance at the .01 level. For each unit increase on the measure for Physical

Abuse before the age of 18 (Physical Abuse Scale) the odds of experiencing an opioid use disorder increase by 14.6% with a significance at the .05 level.

The odds of ever experiencing an opioid use disorder decrease by 20.3% as personal income increases by one income bracket. This finding is significant at the .01 level, and this finding indicates that greater income is associated with a better chance of not experiencing an opioid use disorder. The odds of a Black person ever experiencing an opioid use disorder is 22% less than that of a White person, and this comparison is significant at the .01 level. This indicates that Whites are more likely than Blacks to experience an opioid use disorder. The odds of a Hispanic person ever experiencing an opioid use disorder is 18.8% less than that of a White person, and this comparison is significant at the .01 level. This indicates that Whites are more likely than Hispanics to experience and opioid use disorder. The odds of an American Indian/Alaska Native, non-Hispanic person ever experiencing an opioid use disorder is 7.9% higher than that of a White person, and this comparison is significant at the .01 level. This indicates that Whites are less likely than American Indian/Alaska Natives to experience an opioid use disorder. The odds of an Asian/Native Hawaiian/Pacific Islander person ever experiencing an opioid use disorder is 11.1% lower than that of a White person, and this comparison is significant at the .05 level. This indicates that Whites are more likely than Asian/Native Hawaiian/Pacific Islanders to experience an opioid use disorder.

Figures

In Figures 1, 2, and 3, the interaction variables were examined to identify changes of the effects of religious attendance as a protective factor for Opioid Use Disorder at different levels of the Sexual, Emotional, or Physical Abuse Scales. In Figures 1, 2, and 3, each Abuse Scale is used by examining three levels: Low, Medium, and High. Each level corresponds to a level

amount with the scale itself. Since the Sexual Abuse Scale has 16 units, it is split into low = 0, medium = 8, and high = 16. In Figure 1, these levels are described as never sexually abused, mid-point sexual abuse, and max sexual abuse. In Figure 2, the Emotional Abuse Scale has 12 units, therefore, it is split into low = 0, medium = 6, and high = 12. In Figure 2, these levels are described as never emotionally abused, mid-point emotional abuse, and max emotional abuse. In Figure 3, the Physical Abuse Scale has 8 units, and is split into low = 0, medium = 4, and high = 8. These levels of Physical Abuse are described as never physically abused, mid-point physically abused, and max physically abused.

Graphs Illustrating the Interaction Effects

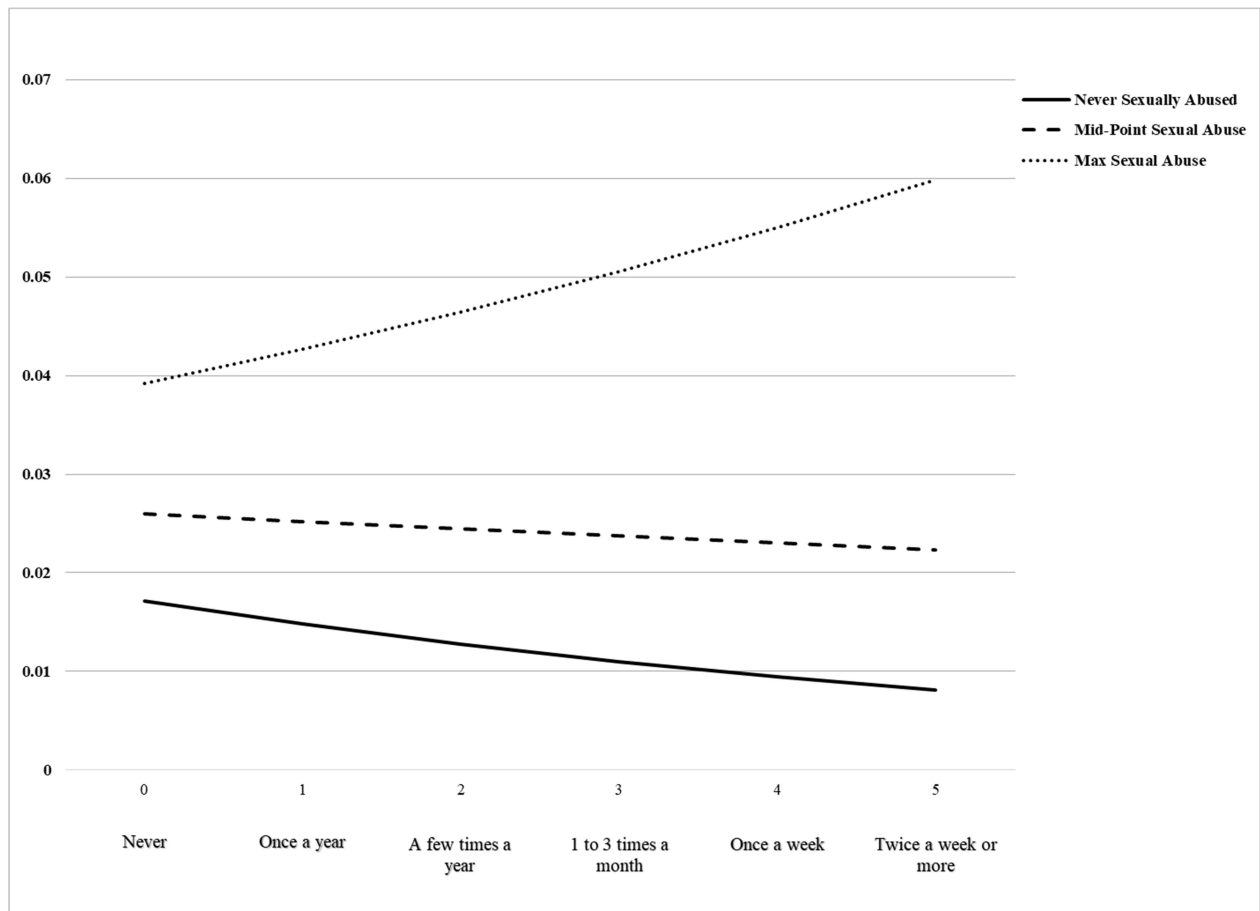


Figure 1. The Effect of the Religious Attendance Scale on the Sexual Abuse Scale as a Protective Factor for Opioid Abuse Outcomes

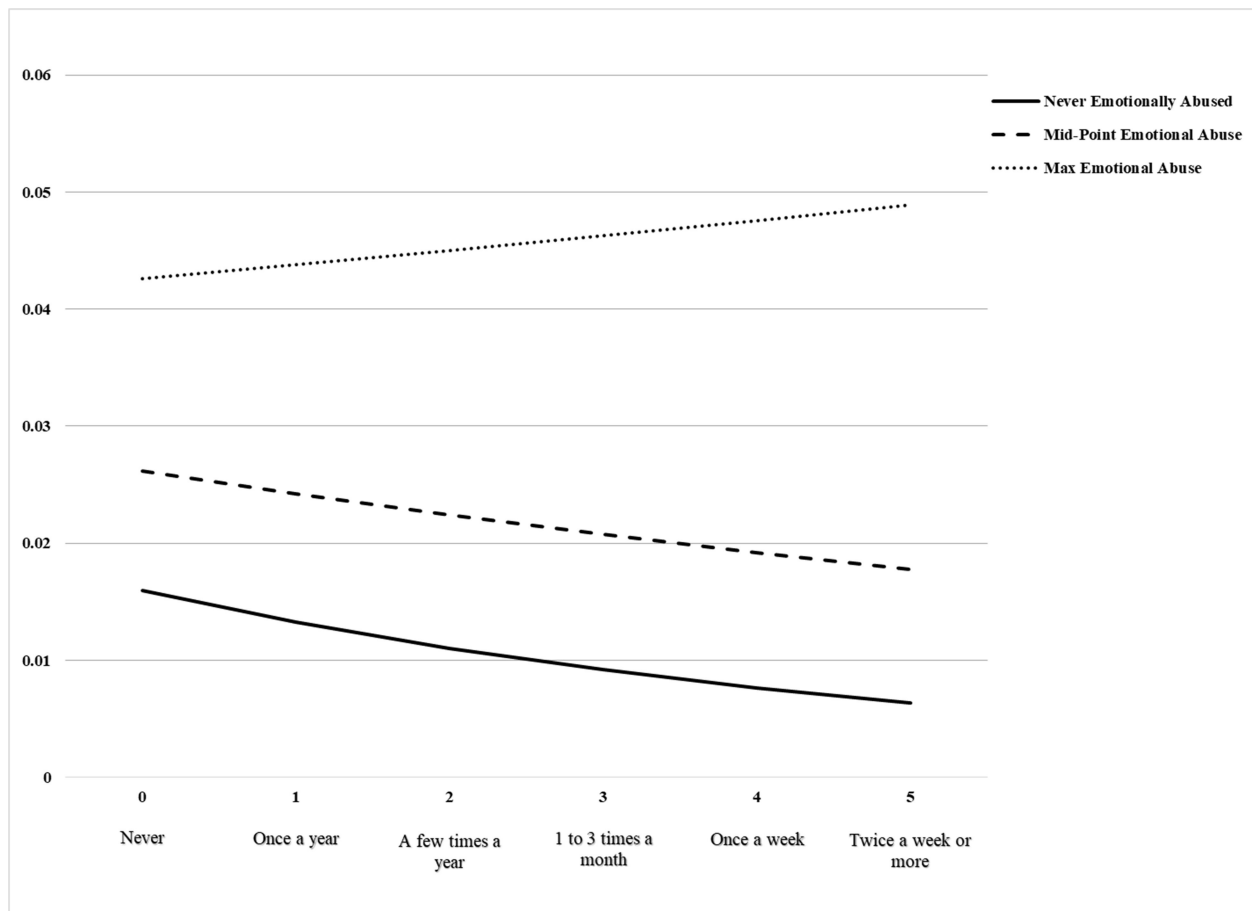


Figure 2. The Effect of the Religious Attendance Scale on the Emotional Abuse Scale as a Protective Factor for Opioid Abuse Outcomes

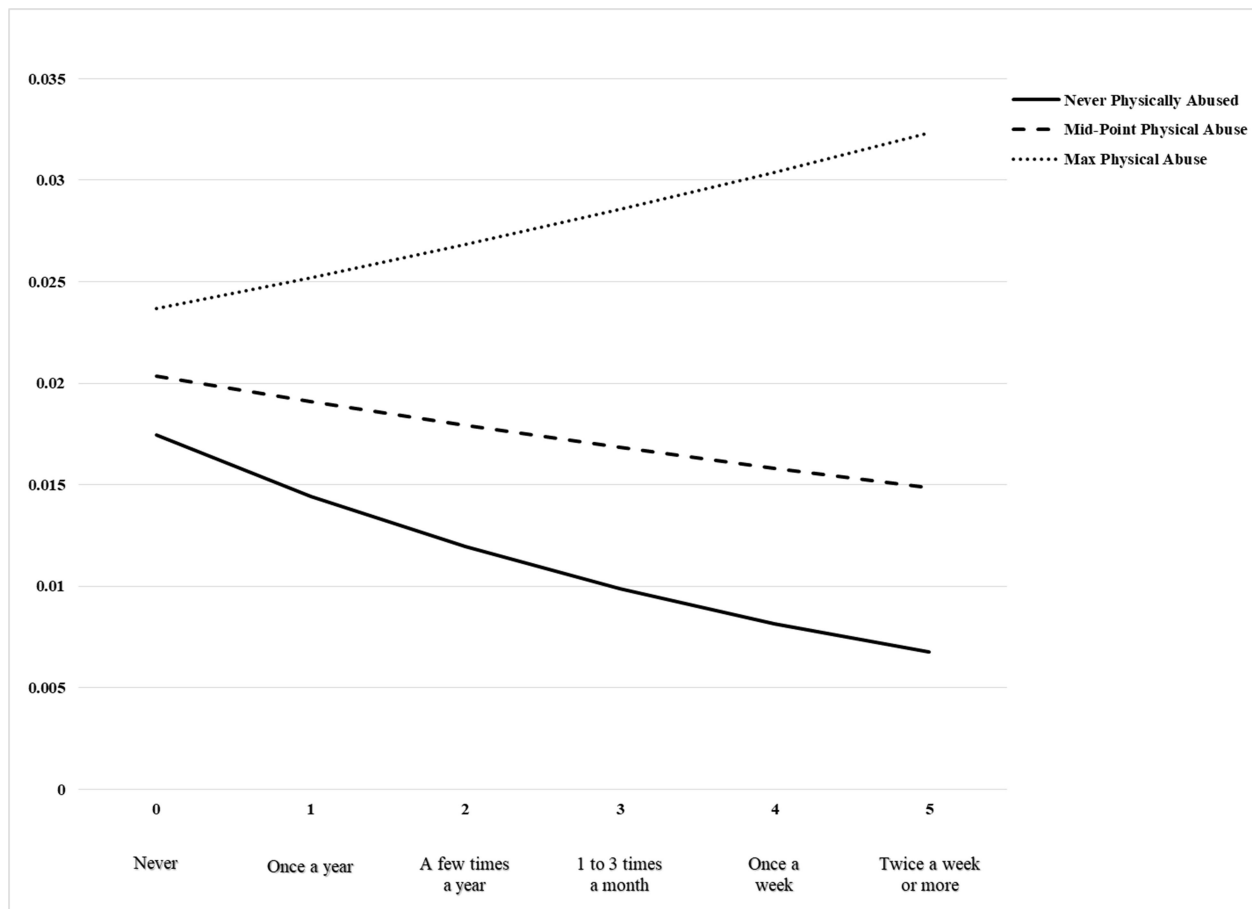


Figure 3. The Effect of the Religious Attendance Scale on the Physical Abuse Scale as a Protective Factor for Opioid Abuse Outcomes

For participants who are at the never sexually abused level in Figure 1, the more religious services attended, the less likely they are to experience an opioid use disorder. However, this change was small, being between 1.71% and 0.8%. The mid-point sexual abuse level indicates similar results, with there being a decrease in change between 2.6% to 2.2%, showing that the more a participant with a mid-point level of sexual abuse attends religious services, the more their chances of experiencing an opioid use disorder would diminish. The max sexual abuse level illustrates different results. At this level, participants' chances of experiencing an opioid use disorder increase with an increased amount of religious service attendance. This change is between 3.9% to 6.0%. The difference between the effects of religious service attendance at different levels of sexual abuse is significance at the level of $p < .05$ for Figure 1.

As for participants that are at the never emotionally abused level in Figure 2, the more religious services attended, the less likely he or she was to experience an opioid use disorder. However, this change was also small, being between 1.6% and 0.6%. The mid-point emotional abuse level indicates similar results as in Figure 1, with there being a decrease in change between 2.6% to 1.%, showing that the more a participant with a mid-point level of emotional abuse attends religious services, the more he or she would diminish the chances of experiencing an opioid use disorder. Like the max sexual abuse level in Figure 1, the max emotional abuse level illustrates different results than the previous two levels in the Figure. At this level, participants' chances of experiencing an opioid use disorder increase with an increased amount of religious attendance. This change is between 4.3% to 4.9%. The difference between the effects of religious service attendance at different levels of emotional abuse is significant at the level of $p < .01$ for Figure 2.

As for participants that are at the never physically abused level in Figure 3, the more religious services attended, the less likely he or she were to experience and Opioid Abuse Disorder. However, this change was also small, being between 1.7% and 0.7%. The mid-point emotional abuse level indicates similar results as Figure 1 and 2 at this level, with there being a decrease in change between 2.0% to 1.4%, showing that the more a participant with a mid-point level of physical abuse attends religious services, the more he or she would diminish the chances of experiencing an opioid use disorder. Like the max sexual abuse level in Figure 1 and max emotional abuse in Figure 2, the max physical abuse level illustrates different results than the previous two levels discussed in Figure 3. At this level, participants' chances of experiencing an opioid use disorder slightly increase with an increased amount of religious attendance. This change is between 2.3% to 3.2%. The difference between the effects of religious service attendance at different levels of physical abuse is significant at the level of $p < .01$ for Figure 3.

It appears that chances of experiencing an opioid use disorder decreases with religious attendance as a protective factor for lower levels of sexual abuse, emotional abuse, and physical abuse. In Figure 1, 2, and 3, this amount is anything below the mid-point of the abuse scale. However, in extreme abuse cases, the effects of religion may have an adverse effect for participants in this study, increasing his or her chances of experiencing an opioid use disorder. When examining the effects of max levels of abuse, there is a slight increase in the chances of experiencing an opioid use disorder as participants increases their religious attendance.

CHAPTER 5

DISCUSSION AND CONCLUSION

Discussion

When examining whether childhood maltreatment (Sexual Abuse Scale, Emotional Abuse Scale, and Physical Abuse Scale) mitigates the effect of religiosity (religious attendance) on experiencing an opioid use disorder outcome, the results indicate that religiosity is less of a protective factor in extreme cases of childhood maltreatment. However, religiosity was still a protective factor for reported Mid-Point levels of abuse (Sexual, Emotional, and Physical). As explained in Chapter 4, males are 47% more likely than females to experience an opioid use disorder. This difference between males and females may be due the way substances are used. According to the National Institute on Drug Abuse (2018a), females ingest and experience substances differently and face different challenges (e.g., child care) when seeking services for rehabilitation to recover from drug addiction. Also, Christian men are less religious than Christian females, according to the U.S. Religious Landscape Study conducted by Pew Research Center in 2014 (Pew Research Center 2018), which may help women of Christian faith to be less liable to experiencing an opioid abuse outcome due to them being more religious. Although there was a reported decline, the Pew Research Center reported finding from 2014 that 70.6% of the U.S population still identifies with a Christian doctrine (Pew Research Center 2015). As results show in Chapter 4, the likelihood of experiencing an opioid use disorder will decrease (22.6%) and will continue to do so as religious attendance increases (22.6% for each unit).

For the different types of childhood maltreatment, having experienced sexual, emotional, and/or physical abuse represented an increase in likelihood for experiencing an opioid use

disorder. The results from the Sexual Abuse Scale indicate that a person is 14.1% more likely to experience an opioid use disorder. There is an increase in percentage for the Physical Abuse Scale at 14.6% and the Emotional Abuse Scale at 31% for likelihood of experiencing an opioid disorder. The results in this study demonstrate that emotional abuse may place a person at a higher risk for opioid abuse. Although childhood abuse has been commonly misunderstood to assume that some types, such as childhood emotional abuse, may be less severe than other types (e.g., sexual and physical), emotional abuse can be equally damaging and less noticeable to act against (Vachon et al. 2015).

When race was evaluated in this study, it was learned that Whites are more likely to experience an opioid use disorder compared to Blacks (20.3%), Hispanics (18.8%), and Asian/Native Hawaiian/Pacific Islanders (11.1%). American Indian/Alaska Native, non-Hispanic persons in this study were found to be slightly more likely (7.9%) than Whites to experience an opioid use disorder. Although rural areas have higher rates of persons that experience an opioid use disorder compared to metropolitan areas, there is also an increase with Whites having opioid use disorders more, overall (Lendarson et al. 2009).

As for income, the results in Chapter 4 illustrate that greater income is associated with a better chance of not experiencing an opioid disorder. For each level income bracket increase, there is a 20.3% increase that a person will not have opioid abuse issues. This is especially important given that rural areas were approximately 17% higher in poverty rates compared to metropolitan areas during 2013 (Thiede, Lichter, and Slack 2018). Not only is income a problem for persons in more rural areas, but seeking treatment is as well. In 2009, Lendarson et al. found that approximately 80% of rural areas are without a rehabilitation center. Rural areas are less likely to have rehabilitation centers to help persons' suffering with addiction detox, leaving some

to self-detox with no help from a medical professional who specializes in drug rehabilitation (Rigg, Monnat, and Chavez 2018). One national study, as discussed in Chapter 2, illustrated that rural areas experienced a more dramatic increase (159% vs. 51%) in opioid related deaths (Paulozzi and Xi 2008).

The ongoing prescription drug abuse in the Appalachia region began with easily affordable OxyContin[®] from medical prescribers (Lammers 2011). The overwhelming appearance of the drug led to labels. Since OxyContin[®] is described to have the same effects liken to heroin, it became known as the “poor man’s” heroin (Kintz 2001). OxyContin[®] abuse became so prevalent in the Appalachian region that the drug was labeled “hillbilly heroin” (Baker and Jenkins 2008).

As previously discussed, there is a well-established link in the literature between childhood maltreatment and drug addiction later in adulthood (see Dube et al. 2003; Dong et al. 2003; Anda et al. 2006), with one study pointing out that 66% of all addicted individuals have experienced some form of abuse: physical, emotional, and/or sexual (Swan 1998). What this study examines is this relationship and how religiosity is used as a protective factor. When looking at Figures 1, 2, and 3, religiosity works best as a protective factor when limited. This study illustrates that how a child is impacted during childhood will impact the protective capacity of religiosity in later adulthood against substance abuse issues, specifically opioid use disorder.

One reason for this may be is how a child forms his or her concept of God and how this concept affects the protectiveness of religiosity against negative health outcomes. The bonding between a child and caregiver is important during early childhood development (Bowlby 1978). Interpersonal regulation of affective experiences is found to be a main function for forming relationships and creating attachment (Sroufe and Waters 1977). In other words, attachment is

how an individual learns to be social with other persons. There appears to be a relationship between how an individual learns to be social and how an individual forms a concept of God (McDonald et al. 2005). The correspondence hypothesis, which posits that a person's style of forming relationships will be consistent with forming relationships with other individuals around him or her (see McDonald et al. 2005), suggests that an early style of relationship forming is correlated to a person's concept of God. In one study, McDonald et al. (2005) found that participants who reported coming from homes where child rearing was controlling and firm, and consisted of a more authoritarian style, tended to prefer higher avoidance of intimacy and anxiety compared to lovability concepts of God, having developed fearful style of attachment toward God as a result of harsh nurturing as a child.

De Roos, Iedema, and Miedema (2004) postulate that a child's concept of God can be shaped through social learning from his or her maternal influence. According to De Roos et al. (2004), there are a few ways a child can learn concepts of God from his or her mother: symbolic conditioning (i.e., children form "evaluative reactions" concerning places, people, and God through abstract contact, such as displayed emotions from the caregiver), nurturing practices (i.e., how the child is being raised), and different denomination the exist among caregivers (e.g., Christianity, orthodox Christian, and nonaffiliated). What De Roos et al. (2004) found is that a mother's denomination, views toward God, and nurturing practices play a significant role in shaping a child's concept of God. Stringent nurturing practices produced outcomes of negative (i.e., punishing) concepts of God by children.

When making attempts to address the opioid epidemic, Federal and state governments that directly or indirectly fund religious organizations to help with the opioid epidemic may want to shape policy that help guide professionals to examine other issues outside of dependency, such

as childhood maltreatment. With such a high correlation between childhood maltreatment and addiction outcomes, this study shows that the effects of childhood maltreatment go deeper than unhealthy outcomes, but may also affect how the conceptual outcome of God is created. How this outcome is formed may influence the protective power of religiosity. Religious institutions without funding from government entities may still want to address this issue and look at alternatives that are outside of a “God cure all” concept. As shown, individuals with higher levels of childhood maltreatment (physical, emotional, and sexual), less religiosity works well as a protective factor against developing an opioid use disorder. This is important because religion is not an adequate enough to address substance abuse entirely.

When connecting these finding to larger issues surrounding the opioid crisis, there is still much work needed to help solve the current epidemic. Due to the lack of treatment programs in rural areas, those suffering from an opioid use disorder may turn to faith-based services to help recover from opioid addiction. Although this resource may be the only avenue for some due to limited access to a medical provider that specializes in addiction treatment, these centers may not be trained and equipped to handle the other aspects of addiction that are noted in this study, such as maladaptive coping mechanisms that may stem from childhood maltreatment. Also, these treatment centers may lack the training for specialized, culturally appropriate treatment that minorities may benefit from. Many centers, such as “Celebrate Recovery” are growing in number, and knowing that other factors are associated with recovery, such as therapy for childhood trauma, may help improve the recovery process and help individuals better heal from addiction.

Conclusion

This study examined the protective effects of religious participation on experiences with an opioid use disorder and whether this effect is weakened for individuals who have experienced higher levels of childhood abuse. Religiosity does decrease the likelihood for experiencing an opioid use disorder for lower levels of childhood maltreatment, but only slightly. As noted in Figures 1, 2, and 3, in extreme cases of sexual, emotional, and physical abuse, religiosity may increase the likelihood of experiencing an opioid use disorder. This issue, if faced, may present a problem for faith-based recovery centers in rural areas.

Limitations and Future Research

Due to there being a low percentage of people having ever experienced an opioid use disorders, there was low variance in the statistical models. This study did not take focus on geographical location as reported opioid use disorder was already low. Since data of Wave 2 (N=34,653) of the NESARC, there has been additional data released (Wave III). Future research should focus the relationship on parental bonding and concepts of God and how this relationship affects individuals in areas health, family, and self-identification. Other areas of study could also focus on the disparity of rehabilitation centers for drug addiction in rural areas in the United States, and examine how faith-based services may be being used more as a replacement due to the lack of treatment centers. As one counselor in rural Appalachian reported,

“They took substance abuse dollars, put it into the faith based community where it has not been spent, and cut the programs in each of the communities by that much. And I don’t think any of that is by accident. I don’t think that I am undervalued by accident. I think my clients are supposed to die.” (Pullen and Oser 2014: 15).

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APPENDIX: Variables and Descriptions

	N	Minimum	Maximum	Mean	Std. Deviation
Opioid Abuse	34,653	0.00	1.00	.0180	.13287
Sexual Abuse Scale	34,217	0.00	16.00	.4392	1.70720
Emotional Abuse Scale	34,361	0.00	12.00	1.4417	2.46515
Physical Abuse Scale	34,384	0.00	8.00	.8704	1.57804
Total Personal Income	34,653	0.00	17.00	7.3878	4.45406
Education	34,653	0.00	13.00	8.8681	2.40548
Black	34,653	0.00	1.00	.1901	.39237
American/Alaska	34,653	0.00	1.00	.0167	.12807
Asian/Native	34,653	0.00	1.00	.0279	.16479
Hispanic	34,653	0.00	1.00	.1835	.38709
Sex	34,653	0.00	1.00	.4203	.49361
Religious Attendance	34,643	0.00	5.00	2.0039	1.94739
Valid N (listwise)	34,126				

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Professional Experience: CPS Investigator, Office of Child Safety, Bristol, TN
Youth Specialist, Appalachian Juvenile Commission,
Bristol, VA
Program Specialist, Trio – Ronald McNair Program,
Johnson City, TN
Graduate Assistant, East Tennessee State University,
Johnson City, TN

Honors and Awards: Certificate of Achievement of Successful Completion of
the CPS Training Academy
Certificate of Recognition of Engaging Families and
Completing Quality Assessments
Faculty Award for Outstanding Student (Highest Award
Presented to a Student at ETSU)
Honors Award from East Tennessee State University for
Outstanding GPA
Midway Honors Scholar Award
Ronald McNair Scholar Award
Who's Who Among Students in American Universities and
Colleges Award
Honors Award from Northeast State Community College
Dean's List: Fall 2012, Spring 2014, Fall 2014, and Spring
2015, Fall 2015, Spring 2016, & Fall 2016